

Valbona Aliko

Ledia Vasjari, Ambra Karaj, Grejsi Gjonaj, Fatbardha Buzo, Bajame Kushta
University of Tirana, Faculty of Natural Sciences, Department of Biology, Tirana, Albania
valbona.aliko@fshn.edu.al

Abstract

Engineered metallic nanoparticles (EMN) have gained significant attention due to their versatile applications in various industries, including cosmetics, electronics, and healthcare. However, concerns have arisen regarding their potential adverse effects on human health and the environment. Understanding the toxicological mechanisms of EMN and their impact on cellular processes is crucial for safe utilization and risk assessment. This presentation aims to explore the nanotoxicity of two types of EMN, zinc (ZnONPs), and copper oxide nanoparticles (CuONPs) and their possible implications for cellular consequences. It investigates the intricate interactions between these metallic nanoparticles and biological systems, focusing on their potential induced toxicity by evaluating membrane destabilization, oxidative stress response, inflammation, genotoxicity, and disruption of cellular signalling pathways. Furthermore, this presentation discusses the challenges and advancements in evaluating the toxicological impact of EMN, encompassing *in vitro*, *in vivo*, and *in silico* cellular and animal models. It addresses the importance of standardized protocols and methodologies for reliable nanotoxicity assessment, including techniques for characterizing EMN and analysing their effects on cellular viability, morphology, and functionality. By shedding light on the intricate relationship between EMN and cellular consequences, this presentation aims to contribute to the growing body of knowledge in the field of nanotoxicology. It underscores the importance of interdisciplinary collaborations between researchers, engineers, and regulatory bodies to develop safe practices and guidelines for the application of NPs.

References

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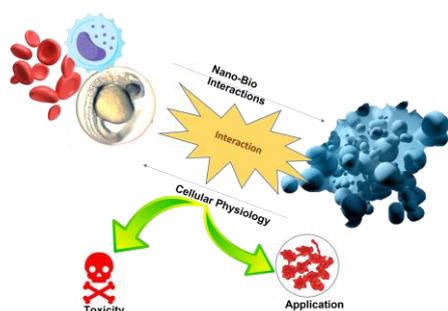


Figure 1: Nano-Bio Interactions